

ABSTRACT

The present invention provides a method of compiling a positive sense functional gene profile of an organism, a method of changing the phenotype or biochemistry of an organism, a method of determining a change in phenotype or 5 biochemistry of an organism, and a method of determining the presence of a trait in an organism. The methods comprise expressing transiently a nucleic acid sequence of a donor organism into a host plant to affect phenotypic or biochemical changes in the host organism. A viral vector functional genomic screen has been developed to identify nucleotide sequences in transfected plants by enhancing or suppressing an endogenous 10 gene expression in a positive sense mechanism, or by overexpressing a new protein. Once the presence of a trait in a plant is identified by phenotypic or biochemical changes in the host plant, the nucleic acid insert in the cDNA clone or in the vector that results in the changes is then sequenced. The present invention provides a method for discovering new gene and its function in a donor organism such as human by 15 transfected a nucleic acid sequence of the donor organism into a host organism in a positive sense.